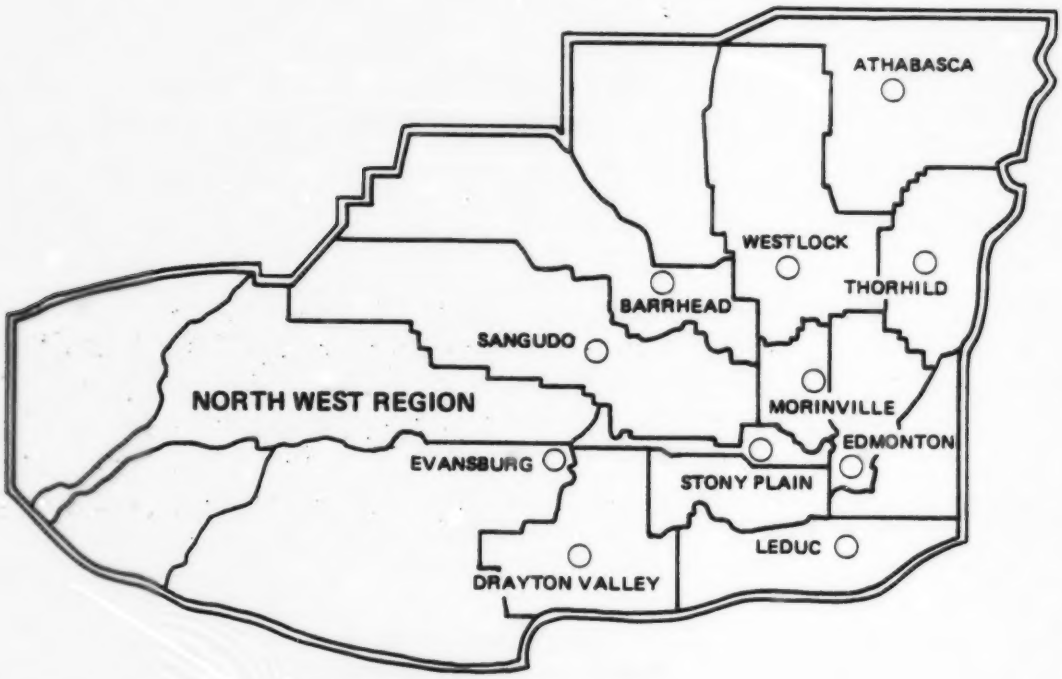
1982 THE ALBERTA REGIONAL FARM ENTERPRISE RESEARCH PROJECT



BARRHEAD REGION

Alberta
AGRICULTURE
Economic Services Division
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THE ALBERTA REGIONAL FARM ENTERPRISE

RESEARCH PROJECT

1982

BARRHEAD REGION

BY

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Alberta Department of Agriculture
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SECTION 1

INTRODUCTION

The Alberta Regional Farm Enterprise Research Project in the Barrhead Region was initiated by the Production Economics Branch in the spring of 1981. Its principal goal was to obtain production cost and return estimates for the major agricultural crops grown in the Barrhead Region during the 1980 crop year. To realize this purpose, financial and physical data were gathered from nine farms. All of the farms considered were predominantly grain farms located in the Morinville District with barley, wheat, and canola being the major crops grown. A subsequent report summarizing the findings of this 1980 study was published in December, 1981.

A study of the 1981 crop year was done in 1982. Twelve farms were involved, nine of which were retained from the previous year. The results of this 1981 study were published in a second report entitled: "The Alberta Regional Farm Enterprise Research Project - 1981 - Barrhead Region," in September, 1982. As was initially agreed, the duration of this project would be three production (crop) years. As such, this report addresses itself to the third and final production year - 1982.

A total of twelve farms participated, all of which were retained from the previous study year. Following discussions of the results of the second production year with study participants, it was obvious that they found the results to be much more meaningful and beneficial when the information was expressed on a per acre and per bushel basis. By doing this, they were better able to identify and interpret their costs relative to their returns. They also expressed continued support in knowing about their costs and returns by land tenure (that is, owned land versus rented land). With this in mind, costs and returns data for each crop enterprise studied were collected, analysed and evaluated, based upon the type of land ownership. Shown on page 2 is a breakdown of the major crops studied in 1982.

CROP	NUMBER OF RECORDS
Barley Grown on Owned Land	12
Barley Grown on Rented Land	9
Wheat Grown on Owned Land	5
Wheat Grown on Rented Land	6
Canola Grown on Owned Land	8
Canola Grown on Rented Land	7
Oats grown on Owned and Rented Land*	7
Hay Grown on Owned and Rented Land*	4
Summerfallowing of Owned Land	7
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Objectives:

The Alberta Farm Enterprise Research Project was developed to help the agricultural producer analyze his farming operation using the enterprise approach. Different from the original Farm Business Analysis (F.B.A.) program, this project was designed to provide the farmer with costs and returns information specific to a particular type of crop grown on his farm.

Too often, extension personnel have found themselves short of enterprise/whole farm costs and returns information when dealing with farm clientele at the field level. This, when coupled with the fact that physical and financial data for different farming enterprises vary not only within the region, but also from farm to farm depending upon the enterprise mix, makes the need for such a project only too obvious. Consequently, to accomodate and compensate for some of these needs, the Alberta Regional Farm Enterprise Research project has established as its objectives the following:

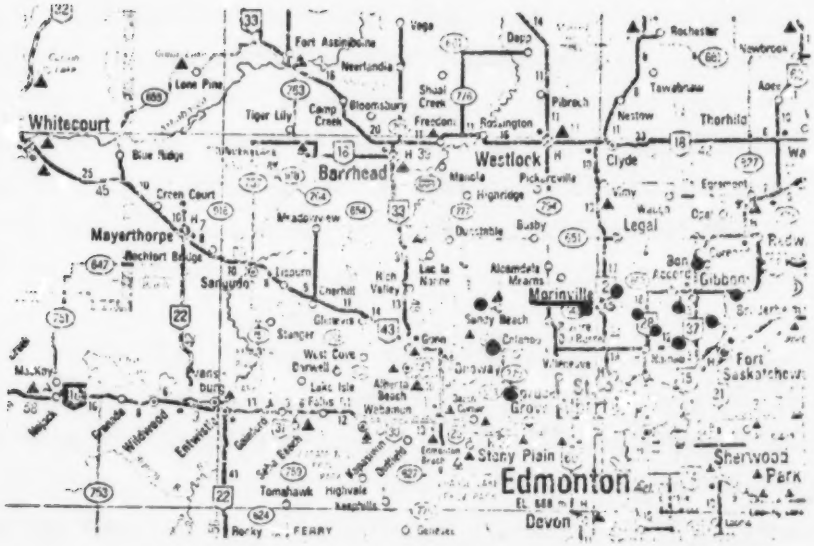
* Due to the lack of data for a complete analysis on a land tenure basis, much of the information for oats and hay had to be combined and as such, is presented in a general form.

1. To document detailed input/output and costs/returns data by enterprise and whole farm for the six farming regions in Alberta;
2. To provide each participant with a comparative interpretation of his farming enterprise relative to the total group studied for a particular region;
3. To provide each participant with accurate and detailed costs/returns information for each enterprise studied, as well as, the overall farm;
4. To evaluate the relative performance of different farming systems on a regional basis and changes in performance over time;
5. To regularly monitor and periodically update the above data base;
6. To establish and maintain contact with the farming community and to be able to promptly respond to the needs of the producers;
7. To provide headquarter staff, agri-business and the extension field staff with accurate and comprehensive resource information.

The Study Sample

Participants for the study were selected based on two criteria, namely, 1) the type of crops grown and 2) size of operation. The selection of participants was done by the District Agriculturist from the Morinville area seeing that he was most familiar with the type of farming operations practised in this region. A total of twelve farms was selected, six of which had 1,100 acres and more seeded to grain and oilseeds. The remaining six farms had less than 1,100 acres seeded to grain and oilseeds.

Shown below on the map are the approximate locations of the study participants with respect to the town of Morinville.



In order to ensure the accurate recording of the relevant information with regards to the study, participating farmers were visited twice. The first visit was made in the fall of 1982, at which time study objectives, data requirements and questionnaire completion were discussed with participants. Also, during this visit some recording of inventory data for such items as machinery, land, buildings, etc. was made. The participants were again visited during the early spring of 1983 to assist in questionnaire completion. This mainly involved discussions with the participants of the actual amounts of physical inputs used in the

production of a given crop, as well as, the recording of the operating costs and crop receipts data for the 1982 crop year.

The questionnaire used in this study was exactly the same as that used in the previous year and contained three sections. Section I was simply a recording of all receipts and expenses incurred on the farm and was quite similar to the information required for income tax purposes. Section II was a little different in that it was designed to record data specific to each crop enterprise and to a greater extent relied upon the participants' judgement to best allocate their total farm receipts and expenses with respect to the various crops considered. Section III reported both physical and financial data specific to each crop that was not recorded in Sections I and II.

Method of Analysis:

The reader should be aware that all of the costs and returns data provided in this report are expressed on a per unit of production basis. For example, the information provided with regards to grain production is expressed on a per acre, as well as, on a per bushel basis.

In the summary tables provided, determination of cost for each category of expense was calculated by taking the summation of all expenses in that category and dividing by the total units of production on survey. To illustrate, suppose one wanted to calculate the fertilizer expense for wheat production as incurred by five farms. The method used was simply an addition of each of the five farms total fertilizer expense thereby, yielding a grand total which was subsequently divided by the total wheat acreage for the five farms considered. By using this approach, the costs and returns data were weighted on a per unit of production basis rather than calculated using the simple average method.

1. Receipts: Receipts or returns as it is sometimes called, for a given crop represent the value amount of that crop and was essentially the same as that recorded for income tax purposes. It should be mentioned that since the normal practice is that the total harvest of a given crop in any given year is not completely sold until sometime during the following year, the value of the 1982 crop had to be estimated. In adition, study participants also indicated

miscellaneous receipts that were associated with the crop, and included such items as patronage dividends, gas rebates, crop insurance, custom work etc.

2. Labour Costs: The principal source of labour for the farms studied came from the farmer (operator) and his family. Operator and family labour were valued on an annual basis and allocated accordingly to the various enterprises on the farm. As was revealed, in certain cases some of the participants had to rely on paid full-time or part-time labour to perform some of the necessary farming operations. For such situations, total labour cost as reported in the year-end statement was allocated to the various enterprises on the farm by the participant himself who was most familiar with what the hired man was doing.

3. Material Costs: Most of the supplies used on the grain farms were bought during the production year and were recorded as such. However, it was necessary to record the inventory of many inputs such as fertilizer, seeds and chemicals since these inputs might have been purchased during the previous year for use in the production year under study. Despite this, an attempt was made to accurately monitor all costs used in the production of a crop, regardless of when purchased or applied to the land (for example, fall fertilization). Home-grown seed was valued at the current market price (at time of analysis) and was treated as an operating cost.

4. Miscellaneous Costs: Items such as property taxes, insurance, utilities, etc. were valued at the actual amounts paid, and was proportionately allocated to each of the crops considered. Also, included in this category were the purchases of small tools, accounting and legal fees, building repairs, and crop share/cash rent.

5. Machine Costs: Machine operating costs consisted of machine repairs, fuel, lubrication and insurance expenses. In order to allow for easier allocation and computation of machine cost for a specific enterprise, this cost was broken down into several sub-categories. The sub-categories considered were: farm power machinery, general crop machinery, haying machinery and specialty crop machinery.

6. Investment Costs: An opportunity cost was calculated on the equity portion of land, buildings, and machinery investment. The market value of all investment items were given by the study participants themselves. They also provided information such as the amounts of short term, intermediate and long term loans that were outstanding. With this kind of information an equity base was established and a long term percentage rate of return of 9 per cent was applied to arrive at the opportunity cost on the operator's investment. Indicated under the heading of "Production Costs" in the summary tables are the opportunity costs on equity, and together with the total operating costs, long term interest paid and the value of unpaid labour make up the total production cost.

For the purpose of this study a fixed rate of depreciation was used for each category of investment. For example, for power and general crop machinery a depreciation rate of 10 per cent was charged while a 5 per cent depreciation was used for buildings. This allowance for depreciation is shown under the heading of "Operating Costs" of the summary tables.

SECTION II

SUMMARY OF COSTS AND RETURNS FOR THE STUDY GROUP

This section provides detailed information on the group average costs and returns for the various crops analysed.[1] Consistent with what was reported in the previous study, barley was the most extensively grown crop in the Barrhead region, as all of the twelve farms studied were able to provide related costs and returns information. Group average costs and returns data are also provided for the production of wheat, canola, oats and hay.

The data as presented in the summary tables are divided into five sections. Section A provides information relating to farm income. The phrase acreage per farm is simply the average size of a given crop grown by a typical study participant. The term yield per acre is the weighted yield for the total acres under study. Receipts, expressed on a per acre basis were derived from two sources namely, from the value of the crop itself and secondly, from miscellaneous crop receipts such as crop insurance, stabilization payments, value of aftermath, patronage payments etc. Receipts on a per acre and a per bushel basis are shown for easy comparison.

Section B presents operating cost data which basically include all "out of pocket" costs and an allowance for depreciation. As most farmers are interested in knowing their break-even point in production, total operating costs data were given on a per unit basis as this can be interpreted as a short run break-even price required to cover the cost of production. Knowledge of this type of information is very useful to the farmer in the making of management decisions especially, when choosing among different alternatives.

Indicated in Section C is the total cost of production for a given crop. Again, the information presented here is expressed on a per acre

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[1] All study participants are interested in knowing how the economics of their operations compare to the group average.

and per bushel basis to allow for easy comparison and interpretation. As shown, total operating costs plus, an opportunity cost on the equity portion of investment, along with unpaid family labour and long term interest paid equal total production cost. It is important to note that any income received over and above the total production cost can be interpreted as a return to management or profit.

Section D attempts to evaluate the farmer's management ability by providing such information as: i) the return over operating costs; ii) return to management and iii) total labour hours used. Of critical importance to the farmer is the value of the return over operating costs, seeing that this is normally the figure which is referred to when choosing among different crop alternatives. Generally speaking, the farmer wishes to see his return over operating costs to be positive and as large as possible. In the event that this figure is large and negative, the farmer is better off shifting his present resources to other more profitable production activities.

All of the investment items in relation to a given crop are shown in Section E. The purpose of having such information enables the operator to compare the use of his capital among different investments alternatives and to adjust same as is necessary. Information on total investment and labour hours used are most useful to the farmer especially, when he is making management decisions concerning the expansion of his farm or choosing among the different alternatives that are at his disposal.

On the next two pages is a summary of the costs and returns for the major crops studied in the Barrhead Region. The information presented here is indicative of all of the respective enterprise reports gathered from the twelve farms surveyed. More detailed analyses of group average costs and returns for the various crops studied are presented in Tables 2 through 11 inclusive.

TABLE 1 SUMMARY OF COSTS AND RETURNS FOR CROPS SURVEYED - 1982

BARRHEAD REGION

	Barley		Wheat		Canola	
	Owned	Rented	Owned	Rented	Owned	Rented
Number of Farms	12	9	5	6	8	7
Average Acreage	265.58	545.89	132.60	313.00	139.87	248.14
Yield (Bushels/Acre)	60.82	68.55	40.99	28.77	24.66	27.13
Receipts ($/Acre)	131.30	145.14	155.68	107.01	194.73	181.61
	Dollars Per Acre					
Material Costs	38.21	37.81	39.14	39.05	42.18	37.68
Machine Operating	16.70	18.04	17.89	14.32	17.73	17.75
Miscellaneous	12.62	44.18	14.82	38.30	24.59	36.51
TOTAL CASH COSTS	67.53	100.03	71.85	91.67	84.50	91.94
Depreciation	26.62	23.16	23.87	21.98	27.71	30.84
TOTAL OPERATING COSTS	94.15	123.19	95.72	113.65	112.21	122.78
Interest on Equity	127.21	17.20	126.47	15.64	130.68	25.67
Long Term Interest Paid	6.21	8.62	4.85	9.95	4.07	3.63
Unpaid Labour	20.35	19.17	16.11	16.21	21.20	22.08
TOTAL PRODUCTION COSTS	247.93	168.17	243.14	155.45	268.17	174.17
Return Over Operating Costs	37.15	21.95	59.96	-6.64	82.52	58.83
Return To Management	-116.63	-23.03	-87.46	-48.44	-73.43	7.44
	Bushels Per Acre					
Break-even Yield To Cover:						
Cash Costs	31.26	47.18	18.91	24.64	10.70	13.74
Operating Costs	43.59	58.11	25.19	30.55	14.20	18.35
Total Production Costs	114.78	79.33	63.98	41.79	33.95	26.03

TABLE 1 Cont'd

SUMMARY OF COSTS AND RETURNS FOR CROPS SURVEYED - 1982

BARRHEAD REGION

	Oats	Hay	Summerfallow	
			Owned	Rented
Number of Farms	7	4	7	4
Average Acreage	114.43	41.50	106.43	181.25
Yield (Bushels/Acre)	81.32	2.11 Tons	-	-
Receipts ($/Acre)	105.82	128.46	-	-
	Dollars Per Acre			
Material Costs	31.58	8.05	-	-
Machine Operating	13.14	8.44	8.10	8.59
Miscellaneous	23.04	5.37	7.22	6.44
TOTAL CASH COSTS	67.76	21.86	15.32	15.03
Depreciation	26.63	19.20	14.87	15.67
TOTAL OPERATING COSTS	94.39	41.06	30.19	30.70
Interest on Equity	77.80	91.50	116.97	12.92
Long Term Interest Paid	8.38	4.81	2.33	1.44
Unpaid Labour	17.41	10.32	8.59	9.81
TOTAL PRODUCTION COSTS	197.98	147.69	158.08	54.86
Return Over Operating Costs	11.44	87.41	-30.19	-30.70
Return To Management	-92.15	-19.23	-158.08	-54.86
	Bushels Per Acre			
Break-even Yield To Cover:				
Cash Costs	52.12	0.36 Tons	-	-
Operating Costs	72.61	0.67 Tons	-	-
Total Production Costs	152.29	2.43 Tons	-	-

Barley Production

A total of twelve farms grew barley on both owned and rented land in 1982. The average yield per acre was 60.82 bushels on owned land while on rented land it was 68.55 bushels (Tables 2 and 3). In terms of anticipated returns from barley sold, returns were much higher on rented land at $145.14 per acre ($2.12 per bushel) as compared to $131.30 per acre ($2.16 per bushel) on rented land. Total operating costs for barley grown on owned land averaged $94.15 per acre ($1.55 per bushel), an amount that was considerably lower than the operating costs of $123.19 per acre ($1.80 per bushel) for barley grown on rented land. The higher operating cost as noted for the rented land, in part, reflects the value of cash rent/crop share which in the case of barley averaged $30.45 per acre.

For barley grown on owned land, the most significant operating costs were material inputs, machinery fuel and repairs and depreciation which accounted for 40.6 per cent, 17.7 per cent and 28.3 per cent of the total, respectively. For rented land, one of the more significant operating costs was cash rent/crop share which represented 24.7 per cent of the total. Other significant costs were material inputs, depreciation and fuel/repairs which amounted to 30.7 per cent, 18.8 per cent and 14.6 per cent of the total operating costs, respectively.

When considering total production costs, these were found to be higher on the owned land at $247.93 per acre ($4.08 per bushel) as opposed to $168.17 per acre ($2.45 per bushel) on rented land. These results were to be expected due to the method used in the valuing of owned land. For the purpose of this study, land was valued at $1200.00 per acre and to reflect the opportunity cost of owning such land, an interest rate of 9 per cent was charged. Consequently, study participants growing barley on their own land had the highest land cost at $104.76 per acre as compared to those who grew their barley on rented land. Farmers who rented land reported a land cost of only $30.45 per acre.

Close examination of returns over operating costs shows that a definite advantage exists in the owning of land as opposed to renting. To illustrate, return over operating costs for farmers who owned their

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Table 2 BARLEY (OWNED) CROP ENTERPRISE

		TOTAL	PER UNIT $/Bu	PER ACRE
A.	INCOME			
	NUMBER OF ACRES	265.58		
	TOTAL PRODUCTION	16151.91		60.82
	CROP VALUE	34871.00		131.30
	CROP INSURANCE RECEIPTS			
	MISCELLANEOUS RECEIPTS			
	GROSS INCOME	34871.00	2.16	131.30
B.	OPERATING COSTS			
	FERTILIZER	5553.91		20.91
	CHEMICALS	3066.58		11.55
	SEED PURCHASED	794.08		2.99
	HOME GROWN SEED	732.58		2.76
	CUSTOM WORK HIRED	41.75		0.16
	CROP AND HAIL INSURANCE	479.17		1.80
	CASH RENT AND CROP SHARE			
	POWER MACHINERY - FUEL	2745.92		10.34
	POWER MACHINERY - REPAIRS	1690.42		6.36
	GENERAL MACHINERY - REPAIRS			
	SPECIAL MACHINERY - REPAIRS			
	MISCELLANEOUS EQUIPMENT			
	BUILDING REPAIRS	141.42		0.53
	OPERATING CAPITAL INTEREST PD.	45.83		0.17
	UTILITIES	423.92		1.60
	OTHER INSURANCE	321.83		1.21
	PROPERTY TAXES	959.17		3.61
	ACCOUNTING AND LEGAL	170.92		0.64
	OTHER			
	HIRED LABOUR	637.92		2.40
	TOOLS PURCHASED	128.42		0.48
	DEPRECIATION - IMPROVEMENTS	540.00		2.03
	DEPRECIATION - MACHINERY	6531.91		24.59
	TOTAL OPERATING COSTS	25005.75	1.55	94.15
C.	PRODUCTION COSTS			
	OPERATING COSTS	25005.75		94.15
	INT. ON EQUITY - OWNED LAND	27822.44		104.76
	INT. ON EQUITY - IMPROVEMENTS	1027.61		3.87
	INT. ON EQUITY - MACHINERY	4935.83		18.58
	INT. ON EQUITY - SUPPLIES			
	INTEREST ON LONG TERM DEBT	1649.00		6.21
	OPERATOR'S LABOUR	5278.75		19.88
	FAMILY LABOUR	125.50		0.47
	TOTAL PRODUCTION COSTS	65844.81	4.08	247.93
D.	MANAGEMENT FACTORS			
	RETURN OVER OPERATING COSTS	9865.25	0.61	37.15
	RETURN TO MANAGEMENT	-30973.86	-1.92	-116.63
	LABOUR USED (HOURS)	822.25	0.05	3.10

		OPERATOR	LANDLORD	PER ACRE
E.	INVESTMENT ITEMS			
	SUPPLY INVENTORY			
	POWER MACHINERY	45238.08		170.33
	OTHER MACHINERY	13034.33		49.08
	BUILDINGS AND IMPROVEMENTS	11764.83	426.00	45.90
	LAND	318700.00		1200.00
	TOTAL INVESTMENT	388737.25	426.00	1465.32

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Table 3 BARLEY (RENTED) CROP ENTERPRISE

A. INCOME	TOTAL	PER UNIT $/Bu	PER ACRE
NUMBER OF ACRES	545.89		
TOTAL PRODUCTION	37418.55		68.55
CROP VALUE	79228.50		145.14
CROP INSURANCE RECEIPTS			
MISCELLANEOUS RECEIPTS			
GROSS INCOME	79228.50	2.12	145.14
B. OPERATING COSTS			
FERTILIZER	13297.00		24.36
CHEMICALS	5148.44		9.43
SEED PURCHASED	754.44		1.38
HOME GROWN SEED	1438.78		2.64
CUSTOM WORK HIRED	360.22		0.66
CROP AND HAIL INSURANCE	970.22		1.78
CASH RENT AND CROP SHARE	16623.89		30.45
POWER MACHINERY - FUEL	5655.78		10.36
POWER MACHINERY - REPAIRS	4191.11		7.68
GENERAL MACHINERY - REPAIRS			
SPECIAL MACHINERY - REPAIRS			
MISCELLANEOUS EQUIPMENT			
BUILDING REPAIRS	376.89		0.69
OPERATING CAPITAL INTEREST PD.	85.11		0.16
UTILITIES	1144.00		2.10
OTHER INSURANCE	547.33		1.00
PROPERTY TAXES	275.22		0.50
ACCOUNTING AND LEGAL	476.00		0.87
OTHER			
HIRED LABOUR	3018.33		5.53
TOOLS PURCHASED	243.44		0.45
DEPRECIATION - IMPROVEMENTS	1021.78		1.87
DEPRECIATION - MACHINERY	11620.66		21.29
TOTAL OPERATING COSTS	67248.62	1.80	123.19
C. PRODUCTION COSTS			
OPERATING COSTS	67248.62		123.19
INT. ON EQUITY - OWNED LAND			
INT. ON EQUITY - IMPROVEMENTS	1379.32		2.53
INT. ON EQUITY - MACHINERY	8007.79		14.67
INT. ON EQUITY - SUPPLIES			
INTEREST ON LONG TERM DEBT	4703.33		8.62
OPERATOR'S LABOUR	9824.55		18.00
FAMILY LABOUR	638.67		1.17
TOTAL PRODUCTION COSTS	91802.25	2.45	168.17
D. MANAGEMENT FACTORS			
RETURN OVER OPERATING COSTS	11979.89	0.32	21.95
RETURN TO MANAGEMENT	-12573.73	-0.34	-23.03
LABOUR USED (HOURS)	1949.44	0.05	3.57

E. INVESTMENT ITEMS	OPERATOR	LANDLORD	PER ACRE
SUPPLY INVENTORY			
POWER MACHINERY	74973.00		137.34
OTHER MACHINERY	27485.22		50.35
BUILDINGS AND IMPROVEMENTS	17206.78	1788.44	34.80
LAND		655066.62	1200.00
TOTAL INVESTMENT	119665.00	656855.06	1422.49

land was $37.15 per acre ($0.61 per bushel) compared to $21.95 per acre ($0.32 per bushel) for farmers who rented land. However, when non-cash costs are considered, the situation as expressed by return to management does not look too favorable for farmers owning land. For example, return to management was $-116.63 per acre ($-1.92 per bushel) for these farmers. For farmers renting land their return to management was $-23.03 per acre ($-0.34 per bushel). The break-even yields required for barley on owned and rented land were 114.8 and 79.3 bushels per acre, respectively.

Total investment was much higher for barley produced on owned land at $1465.32 per acre. Of this, 81.9 per cent was allocated to land. On a per acre basis, machinery investment amounted to $219.41 or 15.0 per cent of the total. In passing, it should be mentioned that the typical study participant spent an average of 3.10 hours of labour per acre.

For barley grown on rented land, total investment was $219.21 per acre, an amount which excludes the landlord's contribution. Machinery investment totalled $187.69 per acre, representing 85.6 per cent of the total investment. Labour used on rented land averaged 3.57 hours per acre.

Wheat Production

Out of the eleven wheat enterprises analyzed in 1982, five of the operators had owned land while the remaining six operated on rented land (Tables 4 and 5). Wheat yields on owned land averaged 40.99 bushels per acre. On rented land yields were significantly lower at 28.77 bushels per acre. As a consequence, anticipated returns were much higher on owned land at $155.68 per acre ($3.80 per bushel) versus $107.01 per acre ($3.72 per bushel) on rented land.

Operating costs for wheat grown on owned land was $95.72 per acre ($2.33 per bushel), a value much lower than that for wheat grown on rented land ($113.65 per acre or $3.95 per bushel). Most significant of the total operating costs for wheat grown on owned land were material inputs which amounted to $39.14 per acre, followed by depreciation at

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Table 4 WHEAT (OWNED) CROP ENTERPRISE

A. INCOME	TOTAL	PER UNIT	PER ACRE
NUMBER OF ACRES	132.60		
TOTAL PRODUCTION	5435.80	$/Bu	40.99
CROP VALUE	20643.20		155.68
CROP INSURANCE RECEIPTS			
MISCELLANEOUS RECEIPTS			
GROSS INCOME	20643.20	3.80	155.68
B. OPERATING COSTS			
FERTILIZER	2629.60		19.83
CHEMICALS	1509.80		11.39
SEED PURCHASED	896.00		6.76
HOME GROWN SEED	154.00		1.16
CUSTOM WORK HIRED	51.00		0.38
CROP AND HAIL INSURANCE	172.40		1.30
CASH RENT AND CROP SHARE			
POWER MACHINERY - FUEL	1360.40		10.26
POWER MACHINERY - REPAIRS	1011.80		7.63
GENERAL MACHINERY - REPAIRS			
SPECIAL MACHINERY - REPAIRS			
MISCELLANEOUS EQUIPMENT			
BUILDING REPAIRS	112.40		0.85
OPERATING CAPITAL INTEREST PD.	7.40		0.06
UTILITIES	204.20		1.54
OTHER INSURANCE	199.00		1.50
PROPERTY TAXES	522.20		3.94
ACCOUNTING AND LEGAL	143.80		1.08
OTHER			
HIRED LABOUR	430.40		3.25
TOOLS PURCHASED	123.20		0.93
DEPRECIATION - IMPROVEMENTS	283.20		2.14
DEPRECIATION - MACHINERY	2881.40		21.73
TOTAL OPERATING COSTS	12692.20	2.33	95.72
C. PRODUCTION COSTS			
OPERATING COSTS	12692.20		95.72
INT. ON EQUITY - OWNED LAND	14266.21		107.59
INT. ON EQUITY - IMPROVEMENTS	448.79		3.38
INT. ON EQUITY - MACHINERY	2054.82		15.50
INT. ON EQUITY - SUPPLIES			
INTEREST ON LONG TERM DEBT	642.60		4.85
OPERATOR'S LABOUR	2068.40		15.60
FAMILY LABOUR	67.00		0.51
TOTAL PRODUCTION COSTS	32240.02	5.93	243.14
D. MANAGEMENT FACTORS			
RETURN OVER OPERATING COSTS	7951.00	1.46	59.96
RETURN TO MANAGEMENT	-11596.84	-2.13	-87.46
LABOUR USED (HOURS)	363.20	0.07	2.74

E. INVESTMENT ITEMS	OPERATOR	LANDLORD	PER ACRE
SUPPLY INVENTORY			
POWER MACHINERY	18286.00		137.90
OTHER MACHINERY	7628.40		57.53
BUILDINGS AND IMPROVEMENTS	5535.80		41.75
LAND	159120.00		1200.00
TOTAL INVESTMENT	190570.19		1437.18

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Table 5 WHEAT (RENTED) CROP ENTERPRISE

		TOTAL	PER UNIT	PER ACRE
A.	INCOME			
	NUMBER OF ACRES	313.00	$/Bu	
	TOTAL PRODUCTION	9004.83		28.77
	CROP VALUE	33493.83		107.01
	CROP INSURANCE RECEIPTS			
	MISCELLANEOUS RECEIPTS			
	GROSS INCOME	33493.83	3.72	107.01
B.	OPERATING COSTS			
	FERTILIZER	6323.00		20.20
	CHEMICALS	3416.33		10.91
	SEED PURCHASED	1191.83		3.81
	HOME GROWN SEED	1291.50		4.13
	CUSTOM WORK HIRED	291.17		0.93
	CROP AND HAIL INSURANCE	702.83		2.25
	CASH RENT AND CROP SHARE	7548.16		24.12
	POWER MACHINERY - FUEL	2652.83		8.48
	POWER MACHINERY - REPAIRS	1829.33		5.84
	GENERAL MACHINERY - REPAIRS			
	SPECIAL MACHINERY - REPAIRS			
	MISCELLANEOUS EQUIPMENT			
	BUILDING REPAIRS	300.00		0.96
	OPERATING CAPITAL INTEREST PD.	3.83		0.01
	UTILITIES	455.67		1.46
	OTHER INSURANCE	383.83		1.23
	PROPERTY TAXES	143.67		0.46
	ACCOUNTING AND LEGAL	228.33		0.73
	OTHER			
	HIRED LABOUR	1629.30		5.21
	TOOLS PURCHASED	300.50		0.96
	DEPRECIATION - IMPROVEMENTS	589.00		1.88
	DEPRECIATION - MACHINERY	6289.83		20.10
	TOTAL OPERATING COSTS	35571.16	3.95	113.65
C.	PRODUCTION COSTS			
	OPERATING COSTS	35571.16		113.65
	INT. ON EQUITY - OWNED LAND			
	INT. ON EQUITY - IMPROVEMENTS	804.69		2.57
	INT. ON EQUITY - MACHINERY	4091.58		13.07
	INT. ON EQUITY - SUPPLIES			
	INTEREST ON LONG TERM DEBT	3114.00		9.95
	OPERATOR'S LABOUR	4984.33		15.92
	FAMILY LABOUR	91.17		0.29
	TOTAL PRODUCTION COSTS	48656.89	5.40	155.45
D.	MANAGEMENT FACTORS			
	RETURN OVER OPERATING COSTS	-2077.33	-0.23	-6.64
	RETURN TO MANAGEMENT	-15163.07	-1.68	-48.44
	LABOUR USED (HOURS)	1037.50	0.12	3.31

		OPERATOR	LANDLORD	PER ACRE
E.	INVESTMENT ITEMS			
	SUPPLY INVENTORY			
	POWER MACHINERY	42906.16		137.08
	OTHER MACHINERY	12657.83		40.44
	BUILDINGS AND IMPROVEMENTS	10759.50	393.50	35.63
	LAND		375600.00	1200.00
	TOTAL INVESTMENT	66323.50	375993.50	1413.15

$23.87 per acre, and fuel and repairs at $17.89 per acre. Altogether, these represented 84.5 per cent of the total operating costs. For wheat grown on rented land the major operating costs included material inputs at $39.05 per acre, cash rent/crop share at $24.12 per acre, depreciation at $21.98 per acre, and fuel/repairs at $14.32 per acre. Collectively, these items represented 87.5 per cent of the total operating costs.

In addition to the operating costs were other cost factors. These were the opportunity costs on the equity portion of investment, long term interest paid and the value of unpaid family labour. Coupling the opportunity cost and unpaid family labour cost resulted in a value of $147.43 per acre for wheat grown on owned land, which when added to the operating costs resulted in a total production cost of $243.14 per acre ($5.93 per bushel). With returns averaging $3.80 per bushel for wheat grown on owned land, the wheat enterprise was able to realize a return over operating costs of $59.96 per acre ($1.46 per bushel). Despite this however, it was still short $87.46 per acre ($2.13 per bushel) in covering total costs.

Total production costs for wheat grown on rented land amounted to $155.45 per acre ($5.40 per bushel). With returns averaging $107.01 per acre and an operating cost of $113.65, a negative return over operating costs of $6.64 per acre ($-0.23 per bushel) was realized.

As can be seen from Tables 4 and 5, total investment was significantly higher for wheat grown on owned land as compared to the wheat grown on rented land. For wheat grown on owned land total investment was $1,437.18 per acre while on rented land a total investment of $211.90 per acre was reported. In terms of labour hours spent per acre, more hours were spent by farmers who rented their land as compared to those owning it. That is, a total of 3.31 hours were utilized per acre by farmers who rented their land, as opposed to that of 2.74 hours per acre spent by farmers who operated on owned land.

Canola Production

The average size of the fifteen canola enterprises surveyed in 1982 was 194 acres. In terms of land tenure, there were seven operations on rented land while the remaining eight were on owned land. Average canola yield, as shown in Tables 6 and 7 was 10 per cent lower on owned land at 24.66 bushels per acre compared to 27.13 bushels per acre reported for rented land. Anticipated returns were $194.73 per acre ($7.90 per bushel) on owned land compared to $181.61 per acre ($6.69 per bushel) on rented land.

Operating costs for canola grown on owned land was $112.21 per acre ($4.55 per bushel). A much higher cost of $122.78 per acre ($4.52 per bushel) was recorded for canola grown on rented land. Most significant of the operating costs for canola grown on owned land were material inputs at $42.18 per acre, depreciation at $27.71 and fuel and repairs at $17.73 per acre. Included in the total operating cost for canola on rented land were cash rent/crop share at $24.04 per acre, material inputs at $37.68 per acre, depreciation at $30.84 per acre and fuel and repairs at $17.75 per acre.

Total production costs were much higher for canola grown on owned land as compared to canola grown on rented land. For owned land it was $268.17 per acre ($10.88 per bushel) versus $174.17 per acre ($6.42 per bushel) on rented land. Return over operating costs for canola on owned land was $82.52 per acre ($3.35 per bushel), and was insufficient by $73.43 per acre ($2.98 per bushel) in covering total production costs.

Canola grown on rented land had returns over operating costs of $58.83 per acre ($2.17 per bushel). It should be mentioned that of all the crops surveyed in 1982, canola grown on rented land was the only group which showed a positive return to management (or profit) of $7.44 per acre ($0.27 per bushel).

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Table 6 CANOLA (OWNED) CROP ENTERPRISE

		TOTAL	PER UNIT	PER ACRE
A.	INCOME			
	NUMBER OF ACRES	139.87		
	TOTAL PRODUCTION	3448.87	$/Bu	24.66
	CROP VALUE	26479.37		189.31
	CROP INSURANCE RECEIPTS	759.00		5.43
	MISCELLANEOUS RECEIPTS			
	GROSS INCOME	27238.37	7.90	194.73
B.	OPERATING COSTS			
	FERTILIZER	2952.50		21.11
	CHEMICALS	1926.50		13.77
	SEED PURCHASED	852.00		6.09
	HOME GROWN SEED	169.69		1.21
	CUSTOM WORK HIRED	174.62		1.25
	CROP AND HAIL INSURANCE	299.75		2.14
	CASH RENT AND CROP SHARE			
	POWER MACHINERY - FUEL	1437.12		10.27
	POWER MACHINERY - REPAIRS	1043.87		7.46
	GENERAL MACHINERY - REPAIRS			
	SPECIAL MACHINERY - REPAIRS			
	MISCELLANEOUS EQUIPMENT			
	BUILDING REPAIRS	102.75		0.73
	OPERATING CAPITAL INTEREST PD.	91.88		0.66
	UTILITIES	182.75		1.31
	OTHER INSURANCE	217.37		1.55
	PROPERTY TAXES	536.00		3.83
	ACCOUNTING AND LEGAL	127.12		0.91
	OTHER	1433.25		10.25
	HIRED LABOUR	178.12		1.27
	TOOLS PURCHASED	94.63		0.68
	DEPRECIATION - IMPROVEMENTS	322.87		2.31
	DEPRECIATION - MACHINERY	3553.25		25.40
	TOTAL OPERATING COSTS	15696.06	4.55	112.21
C.	PRODUCTION COSTS			
	OPERATING COSTS	15696.06		112.21
	INT. ON EQUITY - OWNED LAND	15020.77		107.39
	INT. ON EQUITY - IMPROVEMENTS	535.35		3.83
	INT. ON EQUITY - MACHINERY	2722.20		19.46
	INT. ON EQUITY - SUPPLIES			
	INTEREST ON LONG TERM DEBT	569.87		4.07
	OPERATOR'S LABOUR	2891.37		20.67
	FAMILY LABOUR	74.25		0.53
	TOTAL PRODUCTION COSTS	37509.87	10.88	268.17
D.	MANAGEMENT FACTORS			
	RETURN OVER OPERATING COSTS	11542.31	3.35	82.52
	RETURN TO MANAGEMENT	-10271.51	-2.98	-73.43
	LABOUR USED (HOURS)	376.37	0.11	2.69

		OPERATOR	LANDLORD	PER ACRE
E.	INVESTMENT ITEMS			
	SUPPLY INVENTORY			
	POWER MACHINERY	23590.25		168.65
	OTHER MACHINERY	7630.25		54.55
	BUILDINGS AND IMPROVEMENTS	5957.37	334.75	44.98
	LAND	167850.00		1200.00
	TOTAL INVESTMENT	205027.87	334.75	1468.19

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Table 7 CANOLA (RENTED) CROP ENTERPRISE

		TOTAL	PER UNIT $/Bu	PER ACRE
A.	INCOME			
	NUMBER OF ACRES	248.14		
	TOTAL PRODUCTION	6733.14		27.13
	CROP VALUE	45065.43		181.61
	CROP INSURANCE RECEIPTS			
	MISCELLANEOUS RECEIPTS			
	GROSS INCOME	45065.43	6.69	181.61
B.	OPERATING COSTS			
	FERTILIZER	5610.71		22.61
	CHEMICALS	2737.14		11.03
	SEED PURCHASED	705.43		2.84
	HOME GROWN SEED	296.71		1.20
	CUSTOM WORK HIRED	279.00		1.12
	CROP AND HAIL INSURANCE	735.86		2.97
	CASH RENT AND CROP SHARE	5964.14		24.04
	POWER MACHINERY - FUEL	2747.00		11.07
	POWER MACHINERY - REPAIRS	1658.43		6.68
	GENERAL MACHINERY - REPAIRS			
	SPECIAL MACHINERY - REPAIRS			
	MISCELLANEOUS EQUIPMENT			
	BUILDING REPAIRS	148.43		0.60
	OPERATING CAPITAL INTEREST PD.	180.00		0.73
	UTILITIES	366.57		1.48
	OTHER INSURANCE	423.29		1.71
	PROPERTY TAXES	14.29		0.06
	ACCOUNTING AND LEGAL	309.43		1.25
	OTHER			
	HIRED LABOUR	491.71		1.98
	TOOLS PURCHASED	145.86		0.59
	DEPRECIATION - IMPROVEMENTS	562.00		2.26
	DEPRECIATION - MACHINERY	7091.43		28.58
	TOTAL OPERATING COSTS	30467.43	4.52	122.78
C.	PRODUCTION COSTS			
	OPERATING COSTS	30467.43		122.78
	INT. ON EQUITY - OWNED LAND			
	INT. ON EQUITY - IMPROVEMENTS	876.50		3.53
	INT. ON EQUITY - MACHINERY	5494.66		22.14
	INT. ON EQUITY - SUPPLIES			
	INTEREST ON LONG TERM DEBT	900.86		3.63
	OPERATOR'S LABOUR	5290.71		21.32
	FAMILY LABOUR	188.00		0.76
	TOTAL PRODUCTION COSTS	43218.13	6.42	174.17
D.	MANAGEMENT FACTORS			
	RETURN OVER OPERATING COSTS	14598.00	2.17	58.83
	RETURN TO MANAGEMENT	1847.27	0.27	7.44
	LABOUR USED (HOURS)	672.29	0.10	2.71

		OPERATOR	LANDLORD	PER ACRE
E.	INVESTMENT ITEMS			
	SUPPLY INVENTORY			
	POWER MACHINERY	46635.29		187.94
	OTHER MACHINERY	15763.86		63.53
	BUILDINGS AND IMPROVEMENTS	9784.29	1027.14	43.57
	LAND		297771.37	1200.00
	TOTAL INVESTMENT	72183.37	298798.56	1495.03

Oats Production

In total, seven oats enterprises were studied for the 1982 crop year. As a result of the small number of oat enterprises studied, an analysis by land tenure was not possible. Instead, a general farm analysis was undertaken, the results of which are presented in Table 8. As shown in the table, the average oat producer had a total cropped acreage of 114.43 acres and an average yield of 81.32 bushels per acre. Expected return from this crop was $105.82 per acre or $1.30 per bushel.

The total operating costs for oats amounted to $94.39 per acre ($1.16 per bushel). Similar to what was experienced for the wheat, barley and canola crops, the most significant of the total operating costs was material inputs which totalled $31.58 per acre or 33.5 per cent of the total. This was followed by depreciation at $26.63 per acre and fuel and repairs at $13.14 per acre. Cash rent/crop share was also fairly significant at $12.36 per acre, accounting for approximately 13.1 per cent of the total operating costs. With a return of $105.82 per acre ($1.30 per bushel), and a total operating cost of $94.39 per acre ($1.16 per bushel), oats producers experienced a positive return over operating costs of $11.44 per acre ($0.14 per bushel). However, when non-cash production costs are included, these producers were short in their income by $92.15 per acre ($-1.13 per bushel) in covering their total costs. In terms of labour used in oats production, the average study participant reportedly spent 2.65 hours per acre.

Hay Production

Of the twelve participants studied for the 1982 crop year, only four were involved in hay production. As was the case with oats production, due to the insufficient number of study participants, analysis by land tenure was not possible. Rather, the analysis presented is quite general, attempting to average the costs and returns for hay production, regardless of whether the crop is grown on owned or rented land. It cannot be over emphasized that because of the relatively small sample and acreage, readers are advised to view the data presented in Table 9,

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Table 8 — OATS — CROP ENTERPRISE

A. INCOME	TOTAL	PER UNIT $/BU	PER ACRE
NUMBER OF ACRES	114.43		
TOTAL PRODUCTION	9305.14		81.32
CROP VALUE	12109.29		105.82
CROP INSURANCE RECEIPTS			
MISCELLANEOUS RECEIPTS			
GROSS INCOME	12109.29	1.30	105.82
B. OPERATING COSTS			
FERTILIZER	2280.86		19.93
CHEMICALS	301.79		2.64
SEED PURCHASED	202.57		1.77
HOME GROWN SEED	828.86		7.24
CUSTOM WORK HIRED	195.00		1.70
CROP AND HAIL INSURANCE	80.29		0.70
CASH RENT AND CROP SHARE	1414.29		12.36
POWER MACHINERY - FUEL	989.86		8.65
POWER MACHINERY - REPAIRS	513.86		4.49
GENERAL MACHINERY - REPAIRS			
SPECIAL MACHINERY - REPAIRS			
MISCELLANEOUS EQUIPMENT			
BUILDING REPAIRS	73.71		0.64
OPERATING CAPITAL INTEREST PD.			
UTILITIES	159.29		1.39
OTHER INSURANCE	150.29		1.31
PROPERTY TAXES	214.29		1.87
ACCOUNTING AND LEGAL	40.71		0.36
OTHER			
HIRED LABOUR	211.29		1.85
TOOLS PURCHASED	96.57		0.84
DEPRECIATION - IMPROVEMENTS	257.29		2.25
DEPRECIATION - MACHINERY	2789.71		24.38
TOTAL OPERATING COSTS	10800.50	1.16	94.39
C. PRODUCTION COSTS			
OPERATING COSTS	10800.50		94.39
INT. ON EQUITY - OWNED LAND	6309.15		55.14
INT. ON EQUITY - IMPROVEMENTS	417.43		3.65
INT. ON EQUITY - MACHINERY	2175.65		19.01
INT. ON EQUITY - SUPPLIES			
INTEREST ON LONG TERM DEBT	959.43		8.38
OPERATOR'S LABOUR	1980.43		17.31
FAMILY LABOUR	11.86		0.10
TOTAL PRODUCTION COSTS	22654.42	2.43	197.98
D. MANAGEMENT FACTORS			
RETURN OVER OPERATING COSTS	1308.79	0.14	11.44
RETURN TO MANAGEMENT	-10545.15	-1.13	-92.15
LABOUR USED (HOURS)	303.43	0.03	2.65

E. INVESTMENT ITEMS	OPERATOR	LANDLORD	PER ACRE
SUPPLY INVENTORY			
POWER MACHINERY	20974.43		183.30
OTHER MACHINERY	4184.71		36.57
BUILDINGS AND IMPROVEMENTS	4685.86	145.86	42.22
LAND	73542.81	63771.43	1200.00
TOTAL INVESTMENT	103387.81	63917.29	1462.09

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Table 9 HAY CROP ENTERPRISE

		TOTAL	PER UNIT	PER ACRE
A.	INCOME			
	NUMBER OF ACRES	41.50		
	TOTAL PRODUCTION	87.63	$/TON	2.11
	CROP VALUE	5331.25		128.46
	CROP INSURANCE RECEIPTS			
	MISCELLANEOUS RECEIPTS			
	GROSS INCOME	5331.25	60.84	128.46
B.	OPERATING COSTS			
	FERTILIZER	232.05		5.59
	CHEMICALS			
	SEED PURCHASED	102.00		2.46
	HOME GROWN SEED			
	CUSTOM WORK HIRED			
	CROP AND HAIL INSURANCE			
	CASH RENT AND CROP SHARE			
	POWER MACHINERY - FUEL	198.00		4.77
	POWER MACHINERY - REPAIRS	152.25		3.67
	GENERAL MACHINERY - REPAIRS			
	SPECIAL MACHINERY - REPAIRS			
	MISCELLANEOUS EQUIPMENT			
	BUILDING REPAIRS	9.25		0.22
	OPERATING CAPITAL INTEREST PD.			
	UTILITIES	25.75		0.62
	OTHER INSURANCE	16.25		0.39
	PROPERTY TAXES	112.00		2.70
	ACCOUNTING AND LEGAL	5.25		0.13
	OTHER			
	HIRED LABOUR	53.50		1.29
	TOOLS PURCHASED	0.50		0.01
	DEPRECIATION - IMPROVEMENTS	40.25		0.97
	DEPRECIATION - MACHINERY	756.75		18.23
	TOTAL OPERATING COSTS	1703.80	19.44	41.06
C.	PRODUCTION COSTS			
	OPERATING COSTS	1703.80		41.06
	INT. ON EQUITY - OWNED LAND	3521.34		84.85
	INT. ON EQUITY - IMPROVEMENTS	65.16		1.57
	INT. ON EQUITY - MACHINERY	210.62		5.08
	INT. ON EQUITY - SUPPLIES			
	INTEREST ON LONG TERM DEBT	199.75		4.81
	OPERATOR'S LABOUR	389.75		9.39
	FAMILY LABOUR	38.75		0.93
	TOTAL PRODUCTION COSTS	6129.17	69.95	147.69
D.	MANAGEMENT FACTORS			
	RETURN OVER OPERATING COSTS	3627.45	41.40	87.41
	RETURN TO MANAGEMENT	-797.92	-9.11	-19.23
	LABOUR USED (HOURS)	66.75	0.76	1.61

E.	INVESTMENT ITEMS	OPERATOR	LANDLORD	PER ACRE
	SUPPLY INVENTORY			
	POWER MACHINERY	1240.00		29.88
	OTHER MACHINERY	6088.25		146.70
	BUILDINGS AND IMPROVEMENTS	737.25		17.77
	LAND	40200.00	9600.00	1200.00
	TOTAL INVESTMENT	48265.50	9600.00	1394.35

with some reservation, especially, when attempting to draw any firm conclusions.

The total number of acres of hay grown by the typical study participant was 41.50, and reported an average yield of 2.11 tons per acre. Anticipated return from this crop was estimated at $128.46 per acre ($60.84 per ton).

For hay producers, a total operating cost of $41.06 per acre ($19.44 per ton) was incurred. Of this total, approximately one half (46.8 per cent) was attributed to depreciation. Other significant costs were for fuel and repairs and material inputs reported at $8.44 and $8.05 per acre, respectively. Together, these accounted for 40.2 per cent of the total operating costs. As was observed, there was a positive return over operating costs of $87.41 per acre ($41.40 per ton) for the study participants analysed. However, when the total production cost is considered (that is, to include the non-cash costs), these participants fell short by $19.23 per acre ($9.11 per ton) of covering all of their costs. The total labour hours spent by the average study participant in the production of hay was 1.61 hours per acre.

Summerfallow

In the 1982 crop year, eleven of the twelve farms studied incorporated the practice of summerfallow into their crop rotation. Of this, seven of the participants summerfallowed on owned land while the remaining four chose to summerfallow on rented land. Upon close examination of the study results as portrayed in Tables 10 and 11, there tended to be no significant difference in the operating cost structure for participants who summerfallowed on owned land versus those who summerfallowed on rented land. For example, the total operating cost for summerfallowing owned land was $30.19 per acre as compared to $30.70 per acre for rented land. Most significant of the operating costs was depreciation, totalling $14.87 per acre for owned summerfallowed land as opposed to $15.67 per acre for rented summerfallowed land. Second to this was the cost of machinery at $8.59 per acre on rented land versus $8.10 per acre on owned land.

However, when total production costs are considered, their was quite a dramatic change in the cost structure of rented land versus owned land. That is, the total cost on owned land was approximately three times as great as that on rented land. To illustrate, owned land had a total production cost of $158.08 per acre whereas, on rented land it was $54.86 per acre. This difference is due to the high cost associated with owning land. For example, the cost of owning land for summerfallow practice was reported at $106.13 per acre, an amount that represented 67.1 per cent of the total costs. Total labour hours spent per acre summerfallowing were more or less the same at 1.27 and 1.42 hours for owned and rented land, respectively.

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Table 10 SUMMERFALLOW CROP ENTERPRISE (OWNED)

A. INCOME	TOTAL	PER UNIT	PER ACRE
NUMBER OF ACRES	106.43		
TOTAL PRODUCTION			
CROP VALUE			
CROP INSURANCE RECEIPTS			
MISCELLANEOUS RECEIPTS			
GROSS INCOME			
B. OPERATING COSTS			
FERTILIZER			
CHEMICALS			
SEED PURCHASED			
HOME GROWN SEED			
CUSTOM WORK HIRED			
CROP AND HAIL INSURANCE	41.86		0.39
CASH RENT AND CROP SHARE			
POWER MACHINERY - FUEL	519.29		4.88
POWER MACHINERY - REPAIRS	343.00		3.22
GENERAL MACHINERY - REPAIRS			
SPECIAL MACHINERY - REPAIRS			
MISCELLANEOUS EQUIPMENT			
BUILDING REPAIRS	22.71		0.21
OPERATING CAPITAL INTEREST PD.	5.29		0.05
UTILITIES	74.57		0.70
OTHER INSURANCE	85.86		0.81
PROPERTY TAXES	348.71		3.28
ACCOUNTING AND LEGAL	64.71		0.61
OTHER			
HIRED LABOUR	88.14		0.83
TOOLS PURCHASED	35.86		0.34
DEPRECIATION - IMPROVEMENTS	321.57		3.02
DEPRECIATION - MACHINERY	1261.43		11.85
TOTAL OPERATING COSTS	3213.00		30.19
C. PRODUCTION COSTS			
OPERATING COSTS	3213.00		30.19
INT. ON EQUITY - OWNED LAND	11295.25		106.13
INT. ON EQUITY - IMPROVEMENTS	210.55		1.98
INT. ON EQUITY - MACHINERY	942.68		8.86
INT. ON EQUITY - SUPPLIES			
INTEREST ON LONG TERM DEBT	248.43		2.33
OPERATOR'S LABOUR	898.57		8.44
FAMILY LABOUR	16.00		0.15
TOTAL PRODUCTION COSTS	16824.46		158.08
D. MANAGEMENT FACTORS			
RETURN OVER OPERATING COSTS	-3213.00		-30.19
RETURN TO MANAGEMENT	-16824.46		-158.08
LABOUR USED (HOURS)	135.14		1.27

E. INVESTMENT ITEMS	OPERATOR	LANDLORD	PER ACRE
SUPPLY INVENTORY			
POWER MACHINERY	8615.43		80.95
OTHER MACHINERY	2609.57		24.52
BUILDINGS AND IMPROVEMENTS	2339.43	90.14	22.83
LAND	127714.25		1200.00
TOTAL INVESTMENT	141278.69	90.14	1328.30

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Table 11 SUMMERFALLOW (RENTED) CROP ENTERPRISE

A. INCOME	TOTAL	PER UNIT	PER ACRE
NUMBER OF ACRES	181.25		
TOTAL PRODUCTION			
CROP VALUE			
CROP INSURANCE RECEIPTS			
MISCELLANEOUS RECEIPTS			
GROSS INCOME			
B. OPERATING COSTS			
FERTILIZER			
CHEMICALS			
SEED PURCHASED			
HOME GROWN SEED			
CUSTOM WORK HIRED			
CROP AND HAIL INSURANCE			
CASH RENT AND CROP SHARE			
POWER MACHINERY - FUEL	1108.75		6.12
POWER MACHINERY - REPAIRS	447.50		2.47
GENERAL MACHINERY - REPAIRS			
SPECIAL MACHINERY - REPAIRS			
MISCELLANEOUS EQUIPMENT			
BUILDING REPAIRS	109.00		0.60
OPERATING CAPITAL INTEREST PD.	151.25		0.83
UTILITIES	209.50		1.16
OTHER INSURANCE	197.25		1.09
PROPERTY TAXES	45.75		0.25
ACCOUNTING AND LEGAL	102.75		0.57
OTHER			
HIRED LABOUR	250.25		1.38
TOOLS PURCHASED	103.00		0.57
DEPRECIATION - IMPROVEMENTS	304.50		1.68
DEPRECIATION - MACHINERY	2535.00		13.99
TOTAL OPERATING COSTS	5564.50		30.70
C. PRODUCTION COSTS			
OPERATING COSTS	5564.50		30.70
INT. ON EQUITY - OWNED LAND			
INT. ON EQUITY - IMPROVEMENTS	452.45		2.50
INT. ON EQUITY - MACHINERY	1888.47		10.42
INT. ON EQUITY - SUPPLIES			
INTEREST ON LONG TERM DEBT	260.25		1.44
OPERATOR'S LABOUR	1738.50		9.59
FAMILY LABOUR	39.25		0.22
TOTAL PRODUCTION COSTS	9943.42		54.86
D. MANAGEMENT FACTORS			
RETURN OVER OPERATING COSTS	-5564.50		-30.70
RETURN TO MANAGEMENT	-9943.42		-54.86
LABOUR USED (HOURS)	256.75		1.42

E. INVESTMENT ITEMS	OPERATOR	LANDLORD	PER ACRE
SUPPLY INVENTORY			
POWER MACHINERY	15603.25		86.09
OTHER MACHINERY	6147.50		33.92
BUILDINGS AND IMPROVEMENTS	5027.25	788.75	32.09
LAND		217500.00	1200.00
TOTAL INVESTMENT	26778.00	218288.75	1352.09

SECTION III

SUMMARY OF COSTS AND RETURNS BY SIZE OF OPERATION

As was indicated earlier in Section I, different sizes of operations were selected so as to study the effect that size of operation has on the costs and returns for various crops analysed. Two size groups were considered, comprising of farms having less than 1,100 seeded acres (smaller farms), and those with 1,100 seeded acres and more (larger farms). For the purpose of our study only three crops will be analysed barley, wheat and canola.

A general characteristic of any given enterprise in economic terms reveals that a production unit becomes more and more efficient as its scale of operation increase. However, continued expansion beyond a "certain" size results in what is often referred to by economists as "diseconomies to scale" whereby, as a result of limitations in management, labour, resource use, etc. the production unit becomes very inefficient in terms of costs relative to output. With this in mind, one would expect that as the size of operation for any given farm increase (in our case it is the number of acres), cost savings can be realized especially, in the areas of fixed overhead and operating costs. For example, machinery ownership costs will decrease as the number of acres increase since this fixed cost will be spread over a wider base as opposed to this very cost being spread over a smaller number of acres. Similarly, savings in operating costs can also be realized through the use of larger equipment, bulk-buying and more efficient use of labour and management. By the same token, cost per acre will decline as the number of acres increase resulting in a higher return to management.

Barley Production Costs By Size Of Operation

Presented in Table 12 are the production costs and returns for barley grown on smaller farms, as well as, on larger farms. A look at the operating costs shows that a definite cost advantage exists as the

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Table 12 — BARLEY CROP ENTERPRISE

		BARLEY (LESS THAN 1100 ACRES)			BARLEY (1100 ACRES AND OVER)		
A.	INCOME	TOTAL	PER UNIT $/Bu	PER ACRE	TOTAL	PER UNIT $/Bu.	PER ACRE
	NUMBER OF ACRES	309.78			487.20		
	TOTAL PRODUCTION	21363.89		68.97	30979.10		63.59
	CROP VALUE	43528.66		140.52	68285.06		140.16
	CROP INSURANCE RECEIPTS						
	MISCELLANEOUS RECEIPTS						
	GROSS INCOME	43528.66	2.04	140.52	68285.06	2.20	140.16
B.	OPERATING COSTS						
	FERTILIZER	7328.78		23.66	11082.50		22.75
	CHEMICALS	3376.00		10.90	4719.00		9.69
	SEED PURCHASED	217.22		0.70	1318.40		2.71
	HOME GROWN SEED	1613.56		5.21	595.80		1.22
	CUSTOM WORK HIRED				374.30		0.77
	CROP AND HAIL INSURANCE	411.67		1.33	1077.70		2.21
	CASH RENT AND CROP SHARE	5603.89		18.09	9918.00		20.36
	POWER MACHINERY - FUEL	3757.33		12.13	4575.80		9.39
	POWER MACHINERY - REPAIRS	1997.14		6.45	3815.80		7.83
	GENERAL MACHINERY - REPAIRS						
	SPECIAL MACHINERY - REPAIRS						
	MISCELLANEOUS EQUIPMENT						
	BUILDING REPAIRS	143.89		0.46	357.80		0.73
	OPERATING CAPITAL INTEREST PD.	121.11		0.39	22.60		0.05
	UTILITIES	955.56		3.08	626.10		1.29
	OTHER INSURANCE	394.56		1.27	426.70		0.88
	PROPERTY TAXES	714.11		2.31	571.20		1.17
	ACCOUNTING AND LEGAL	194.00		0.63	353.20		0.72
	OTHER						
	HIRED LABOUR	893.89		2.89	2592.50		5.32
	TOOLS PURCHASED	176.78		0.57	168.10		0.35
	DEPRECIATION - IMPROVEMENTS	723.89		2.34	837.20		1.72
	DEPRECIATION - MACHINERY	8396.55		27.11	9817.00		20.15
	TOTAL OPERATING COSTS	37019.89	1.73	119.50	53249.70	1.72	109.30
C.	PRODUCTION COSTS						
	OPERATING COSTS	37019.89		119.50	53249.70		109.30
	INT. ON EQUITY - OWNED LAND	15729.59		50.78	16314.29		33.49
	INT. ON EQUITY - IMPROVEMENTS	1351.81		4.36	1142.84		2.35
	INT. ON EQUITY - MACHINERY	6847.05		22.10	6269.95		12.87
	INT. ON EQUITY - SUPPLIES						
	INTEREST ON LONG TERM DEBT	916.00		2.96	5097.60		10.46
	OPERATOR'S LABOUR	6765.11		21.84	8208.00		16.85
	FAMILY LABOUR				672.60		1.38
	TOTAL PRODUCTION COSTS	68629.37	3.21	221.54	90954.94	2.94	186.69

Table 12 Cont'd

D. MANAGEMENT FACTORS						
RETURN OVER OPERATING COSTS	6508.78	0.30	21.01	15035.40	0.49	30.86
RETURN TO MANAGEMENT	-25100.75	-1.17	-81.03	-22669.84	-0.73	-46.53
LABOUR USED (HOURS)	1016.56	0.05	3.28	1691.60	0.05	3.47
E. INVESTMENT ITEMS	OPERATOR	LANDLORD	PER ACRE	OPERATOR	LANDLORD	PER ACRE
SUPPLY INVENTORY						
POWER MACHINERY	58526.66		188.93	62787.20		128.87
OTHER MACHINERY	19671.44		63.50	20655.30		42.40
BUILDINGS AND IMPROVEMENTS	15079.44	1150.33	52.39	14691.50	894.10	31.39
LAND	180266.62	191466.62	1200.00	184200.00	400440.00	1200.00
TOTAL INVESTMENT	273544.19	192617.00	1504.83	282334.00	401334.06	1403.26

size of the farm increases. That is, for the smaller farms total operating cost was $119.50 per acre ($1.73 per bushel) compared to $109.30 per acre ($1.72 per bushel) for the larger farms. On a per bushel basis, a difference of one cent may not seem to be much, but on a per acre basis, this cost can become quite astronomical. Upon closer comparison of the operating costs for the two types of operations, one sees that there was a cost disadvantage in terms of material inputs, depreciation, and fuel and repairs for the smaller farms. That is, total cost on a per acre basis for material inputs on smaller farms was $40.47 as opposed to $36.37 reported on larger farms. Similarly, depreciation was higher on smaller farms at $29.45 per acre compared to $21.87 per acre for larger farms. As was expected, larger farms had a higher cash rent/cost share cost of $20.36 per acre, reflecting a greater proportion of rented land in their operations. For the smaller farms their cash rent/crop share cost per acre was $18.09 per acre. Equally true were the costs for hired labour on larger farms. Larger farms reported a hired labour cost of $5.32 per acre versus $2.89 per acre reported for smaller farms. This was to be expected since the operator and his family because of the large size of the farm may not be able to fulfill all the labour demands, and as such, from time to time depend quite heavily on hired help.

Larger farms had a total production cost of $186.69 per acre ($2.94 per bushel) versus $221.54 per acre ($3.21 per bushel) reported by smaller farms. As was anticipated, machinery investment on smaller farms was quite high at $252.43 per acre. For the larger farms, this value was 32.2 per cent lower at $171.27 per acre.

As a result of lower operating costs, larger farms experienced a higher return over operating cost. Their return over operating costs was $30.86 per acre ($0.49 per bushel) compared to $21.01 per acre ($0.30 per bushel) reported by smaller farms. Again, due to the cost advantage that is often associated with size, larger farms exhibited a much more favorable return to management than did smaller farms. That is, large farms had a negative return to management of $46.53 per acre ($0.73 per bushel) versus the more negative value of $81.03 per acre ($1.17 per bushel) reported for smaller farms.

Wheat Production Costs By Size Of Operation

Costs and returns data for wheat production by farm size are shown in Table 13. Similar to what was reported for barley, smaller farms experienced higher material input cost compared to larger farms. Material input cost for the smaller farms totalled $39.84 per acre as compared to $38.21 per acre reported for the larger farms. It is interesting to note that total operating cost on a per acre basis for the smaller farms was much less at $95.72 compared to $116.82 for the larger farms. The reason for this partly reflects the greater need of larger farms to utilize cash rent/crop share arrangements in their farming operations, hence a higher total operating cost. In fact, cash rent/crop share represented 19.5 per cent of the total operating cost on bigger farms. Smaller farms on the other hand had only 13.4 per cent of their total operating costs awarded to cash rent/crop share. However, if operating costs are compared on a per bushel basis, the situation is quite the reversed. That is, the higher yield of 34.88 bushels per acre on the larger farms provided for a wider base in terms of calculating the total operating cost on a per bushel basis, resulting in a cost of $3.35 per bushel. By the same reasoning, smaller farms with their lower yields were unable to spread their total operating costs over a wider base and thus, reported a higher cost of $3.86 per acre.

In terms of return over operating costs, larger farms showed a definite advantage as they demonstrated a positive return over operating costs of $15.03 per acre ($0.43 per bushel). That is to say, these farms were able to cover all of their cash costs, as well as, depreciation. Unlike the larger farms, smaller farms showed a negative return over operating costs of $8.41 per acre ($0.34 per bushel) of covering all of their operating costs.

As for return to management, both the smaller and larger farms had negative returns. For the larger farms, their total production costs amounted to $182.57 per acre ($5.23 per bushel), and with a return of $131.86 per acre ($3.78 per bushel), fell short by $50.72 per acre ($1.45 per bushel) of covering all their costs. For the smaller farms, their situation was even more unfavorable since with a total production cost of $168.50 per acre ($6.79 per bushel) and a return of $87.31 per acre

($3.52 per bushel) were short of covering their production costs by $81.18 per acre ($3.27 per bushel).

Labour requirements on smaller farms averaged 2.95 hours per acre. For the larger farms this value was somewhat higher at 3.46 hours per acre. The typical study participant operating a smaller farm spent $147.20 per acre for machinery investment whereas on larger farms, a total machinery investment of $187.61 per acre was indicated.

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Table 13

		WHEAT (LESS THAN 1100 ACRES)			WHEAT (1100 ACRES AND OVER)		
		TOTAL	PER UNIT	PER ACRE	TOTAL	PER UNIT	PER ACRE
A.	INCOME		$/Bu			$/Bu.	
	NUMBER OF ACRES	256.67			258.50		
	TOTAL PRODUCTION	6366.66		24.81	9016.16		34.88
	CROP VALUE	22410.00		87.31	34085.00		131.86
	CROP INSURANCE RECEIPTS						
	MISCELLANEOUS RECEIPTS						
	GROSS INCOME	22410.00	3.52	87.31	34085.00	3.78	131.86
B.	OPERATING COSTS						
	FERTILIZER	5260.66		20.50	5080.50		19.65
	CHEMICALS	3073.00		11.97	2718.33		10.52
	SEED PURCHASED	875.00		3.41	1294.67		5.01
	HOME GROWN SEED	1017.33		3.96	782.83		3.03
	CUSTOM WORK HIRED				333.67		1.29
	CROP AND HAIL INSURANCE				803.00		3.11
	CASH RENT AND CROP SHARE	3306.33		12.88	5895.00		22.80
	POWER MACHINERY - FUEL	2253.00		8.78	2192.50		8.48
	POWER MACHINERY - REPAIRS	2138.00		8.33	1465.00		5.67
	GENERAL MACHINERY - REPAIRS						
	SPECIAL MACHINERY - REPAIRS						
	MISCELLANEOUS EQUIPMENT	211.67		0.82	276.33		1.07
	BUILDING REPAIRS	20.00		0.08			
	OPERATING CAPITAL INTEREST PD.	393.67		1.53	399.17		1.54
	UTILITIES	191.67		0.75	370.83		1.43
	OTHER INSURANCE	365.33		1.42	349.33		1.35
	PROPERTY TAXES	208.00		0.81	180.00		0.70
	ACCOUNTING AND LEGAL				1794.83		6.94
	OTHER	349.00		1.36	213.00		0.82
	HIRED LABOUR	334.67		1.30	500.67		1.94
	TOOLS PURCHASED	472.33		1.84	5549.33		21.47
	DEPRECIATION - IMPROVEMENTS	4099.33		15.97			
	DEPRECIATION - MACHINERY						
	TOTAL OPERATING COSTS	24569.00	3.86	95.72	30199.00	3.35	116.82
C.	PRODUCTION COSTS						
	OPERATING COSTS	24569.00		95.72	30199.00		116.82
	INT. ON EQUITY - OWNED LAND	9000.00		35.06	6128.52		23.71
	INT. ON EQUITY - IMPROVEMENTS	693.99		2.70	675.15		2.61
	INT. ON EQUITY - MACHINERY	3132.09		12.20	3368.22		13.03
	INT. ON EQUITY - SUPPLIES				2949.67		11.41
	INTEREST ON LONG TERM DEBT	1191.33		4.64	3770.83		14.59
	OPERATOR'S LABOUR	4660.66		18.16	103.67		0.40
	FAMILY LABOUR						
	TOTAL PRODUCTION COSTS	43247.06	6.79	168.50	47195.02	5.23	182.57

D.	MANAGEMENT FACTORS						
	RETURN OVER OPERATING COSTS	-2159.00	-0.34	-8.41	3886.00	0.43	15.03
	RETURN TO MANAGEMENT	-20837.07	-3.27	-81.18	-13110.03	-1.45	-50.72
	LABOUR USED (HOURS)	757.67	0.12	2.95	895.67	0.10	3.46
E.	INVESTMENT ITEMS	OPERATOR	LANDLORD	PER ACRE	OPERATOR	LANDLORD	PER ACRE
	SUPPLY INVENTORY						
	POWER MACHINERY	27483.00		107.08	37179.00		143.83
	OTHER MACHINERY	10298.33		40.12	11316.16		43.78
	BUILDINGS AND IMPROVEMENTS	7968.00	787.00	34.11	9649.33		37.33
	LAND	100000.00	208000.00	1200.00	68600.00	241600.00	1200.00
	TOTAL INVESTMENT	145749.31	208787.00	1381.31	126744.50	241600.00	1424.93

Canola Production Costs By Size Of Operation

A total of fifteen canola enterprises were analysed for the 1982 crop year, the results of which are shown in Table 14. Canola yields were more or less the same for farms seeding less than 1,100 acres to grain and oilseeds (smaller farms) compared to those seeding 1,100 acres or more (larger farms). Average yield on the smaller farms was 24.74 bushels per acre while on the larger farms it was 24.16 bushels per acre.

Total operating costs as incurred on smaller farms averaged $119.01 per acre. For the larger farms, this value was 3.2 per cent higher at $122.87 per acre. Significantly high among the operating cost items on the smaller farms were material inputs at $36.56 per acre, which when expressed as a percentage, represented 30.7 per cent of the total operating cost. For the larger farms the material input cost was $40.95 per acre. A closer examination of the material input costs reveal that the cost on a per acre basis for chemicals and seed was much higher on larger farms at $19.66 as opposed to the $14.98 encountered by smaller farms. As was expected, due to the relatively higher use of rented land on larger farms, their crop share/cash rent cost on a per acre basis was slightly higher at $16.93 versus $16.51 reported for the smaller farms. Total machinery repair and fuel costs on smaller farms amounted to $18.59 per acre. On the larger farms, it was lower at $17.07 per acre. Large farms reported a total depreciation cost of $27.32 per acre compared to $31.53 per acre experienced by smaller farms.

When considering the total production cost, this was much higher on smaller farms at $230.69 per acre ($9.32 per bushel) as opposed to $213.79 per acre ($8.85 per bushel) incurred by larger farms. This higher cost as experienced by the smaller farms is an indication as to the high opportunity cost associated with owning land. The total machinery investment was lower on larger farms at $218.72 per acre compared to $259.22 per acre reported for smaller farms.

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Table 14

A. INCOME	CANOLA (LESS THAN 1100 ACRES) TOTAL	PER UNIT	PER ACRE	CANOLA (1100 ACRES AND OVER) TOTAL	PER UNIT	PER ACRE
NUMBER OF ACRES	153.67			195.87		
TOTAL PRODUCTION	3801.83	$/Bu	24.74	4732.00	$/Bu.	24.16
CROP VALUE	24898.83		162.03	35676.37		182.14
CROP INSURANCE RECEIPTS	1012.00		6.59			
MISCELLANEOUS RECEIPTS						
GROSS INCOME	25910.83	6.82	168.62	35676.37	7.54	182.14
B. OPERATING COSTS						
FERTILIZER	3315.50		21.58	4170.62		21.29
CHEMICALS	1684.83		10.96	2547.87		13.01
SEED PURCHASED	318.67		2.07	1096.25		5.60
HOME GROWN SEED	299.25		1.95	204.87		1.05
CUSTOM WORK HIRED	141.00		0.92	313.00		1.60
CROP AND HAIL INSURANCE	299.83		1.95	718.75		3.67
CASH RENT AND CROP SHARE	2536.50		16.51	3316.25		16.93
POWER MACHINERY - FUEL	1569.50		10.21	1981.87		10.12
POWER MACHINERY - REPAIRS	1287.83		8.38	1360.75		6.95
GENERAL MACHINERY - REPAIRS						
SPECIAL MACHINERY - REPAIRS						
MISCELLANEOUS EQUIPMENT						
BUILDING REPAIRS	189.83		1.24	87.13		0.44
OPERATING CAPITAL INTEREST PD.	305.50		1.99	20.25		0.10
UTILITIES	356.00		2.32	209.37		1.07
OTHER INSURANCE	254.67		1.66	276.12		1.41
PROPERTY TAXES	358.17		2.33	279.87		1.43
ACCOUNTING AND LEGAL	95.50		0.62	210.12		1.07
OTHER				1433.25		7.32
HIRED LABOUR	264.33		1.72	410.12		2.09
TOOLS PURCHASED	166.50		1.08	79.13		0.40
DEPRECIATION - IMPROVEMENTS	450.00		2.93	359.25		1.83
DEPRECIATION - MACHINERY	4395.00		28.60	4993.12		25.49
TOTAL OPERATING COSTS	18288.41	4.81	119.01	24068.00	5.09	122.87
C. PRODUCTION COSTS						
OPERATING COSTS	18288.41		119.01	24068.00		122.87
INT. ON EQUITY - OWNED LAND	8640.00		56.23	8540.77		43.60
INT. ON EQUITY - IMPROVEMENTS	671.70		4.37	587.53		3.00
INT. ON EQUITY - MACHINERY	3483.90		22.67	3747.01		19.13
INT. ON EQUITY - SUPPLIES						
INTEREST ON LONG TERM DEBT	153.50		1.00	1243.00		6.35
OPERATOR'S LABOUR	4211.83		27.41	3529.75		18.02
FAMILY LABOUR				159.37		0.81
TOTAL PRODUCTION COSTS	35449.33	9.32	230.69	41875.42	8.85	213.79

Table 14 Cont'd

D. MANAGEMENT FACTORS						
RETURN OVER OPERATING COSTS	7622.41	2.00	49.60	11608.37	2.45	59.26
RETURN TO MANAGEMENT	-9538.51	-2.51	-62.07	-6199.07	-1.31	-31.65
LABOUR USED (HOURS)	490.33	0.13	3.19	517.00	0.11	2.64
E. INVESTMENT ITEMS	**OPERATOR**	**LANDLORD**	**PER ACRE**	**OPERATOR**	**LANDLORD**	**PER ACRE**
SUPPLY INVENTORY	27698.66		180.25	34451.75		175.89
POWER MACHINERY	12134.33		78.97	8390.00		42.83
OTHER MACHINERY	7471.00	1057.83	55.50	6571.12	440.12	35.79
BUILDINGS AND IMPROVEMENTS	96000.00	88400.00	1200.00	95850.00	139200.00	1200.00
LAND						
TOTAL INVESTMENT	143304.00	89457.81	1514.72	145262.87	139640.12	1454.51

Return over operating costs for larger farms amounted to $59.26 per acre ($2.45 per bushel). For the smaller farms it was much lower at $49.60 per acre ($2.00 per bushel). Again, due to mainly higher ownership costs (interest and depreciation) associated with the investment, smaller farms experienced a much more negative return to management of $62.07 per acre ($2.51 per bushel) versus $31.65 per acre ($1.31 per bushel) reported for the larger farms. In terms of total labour hours spent, smaller farms utilized 3.19 hours per acre compared to 2.64 hours per acre reported for the larger farms.

POOR

QUALITY

ORIGINAL